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SCHOOL AND SOCIETY

EDITED BY J. McKEEN CATTELL

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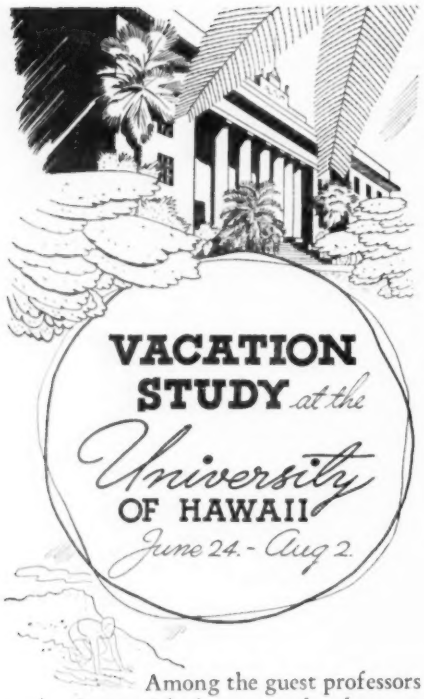

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MATHEMATICS IN MODERN EDUCATION[1]

By Professor RUDOLPH E. LANGER

UNIVERSITY OF WISCONSIN

IT is fitting, it is even essential, that in opening this discussion of the rôle of mathematics in modern education, I should first seek to turn your attention to a brief consideration of the rôle of mathematics in our modern civilization—to the ways in which mathematics manifests itself in the modern environment. This would, of course, be no less the case were we intending to discuss the place in our educational scheme of languages, history, economics or science or any other subject. For it is surely a primary purpose in all teaching to develop in the student the capacity to understand and appreciate the world about him. We strive, therefore, as teachers to develop such natural talents and abilities as our students may have. We seek to endow them with a knowledge of facts that seem to us basic and try to guide them in the mastery of desirable habits of action and thought. And this we do with the ultimate aim of preparing them, in so far as it may be possible, to analyze intelligently the material and cultural phases of their surroundings, that they may determine the most advantageous adjustments to them and draw the utmost of enjoyment from them.

It is appropriate, therefore, that we ask ourselves how fully our environment involves mathematical elements, and to what extent it has been conditioned in its evolution by mathematical thought and facts. If we do this, the conclusion is immediate and inescapable that the world is incurably mathematical, and that far from showing signs of recovery from this condition, it is becoming more and more so from year to year, from day to day. Mathematics was born in the earliest of civilizations. As civilization progressed so mathematical thought developed, and wherever the one has flowered there the other has invariably also brought forth its bloom.

The need of mathematics had its inception in the humblest activities of everyday life. Its evolution began in the remotest antiquity, with the simplest of counting operations, with the crudest of measurements and with the most rudimentary arrangements of shapes and figures in design. Slowly, from almost formless beginnings, order in these matters was observed and recorded, the processes became systematized, rules were found and noted, and more and more interrelations among the rules and processes were discovered. The advance was far from rapid. On the contrary, it was of the most extreme slowness, and many things which seem to us now of the utmost simplicity represent in fact the residual gain of many centuries.

[1] Address before the Schoolmasters' Club, Platteville, Wisconsin, November, 1934, and public address at the University of Wisconsin, December, 1934.

The subject of mathematics was never destined, however, to figure only in the lowly office of a body of workaday rules. The elegant character of its orderliness and the inexorable manner in which it implies fact from other fact, did not long escape the attention of the world's thinkers. They observed it and they were fascinated by it. They investigated it, and their investigations of it became the inspiration and model for all human investigations of truth. The subject grew thus at once as a practical one and as a philosophical one, and, as to this day, the deductions of the theorist again and again showed themselves to be practically fruitful, while practical needs in turn were repeatedly the inspiration of new and renewed speculative thought. Thus the thinker was often the forerunner who spun the web upon which the fabric of material progress was later to be woven.

The accumulation of the simplest arithmetical facts and of the elementary properties of figures, which are all even now ever-present about us and indispensable in household or office or shop, or field or factory, thus developed and grew. Land measuring grew into surveying, and surveying into navigation and astronomy and the charting of the world. It was found that for all undertakings the art of calculation was the only certain means for obviating the grossest of waste in materials and human strength, and that with the aid of this medium alone could the outcome of any project be predicted with even a moderate degree of certainty. And so constructional design became mathematical, and in becoming so attained the potentialities of indefinite growth. Mathematics became the basis for the building of temples and ships, of aqueducts, mines, canals and fortifications, and in our day mathematics is still the cornerstone upon which are built skyscrapers, roads and railroads, dams and telegraphs and telephones, radios and cinemas and artillery, and all the various kinds of machines of flight. Without mathematics there would be no engineering in any modern sense. The development of technology, which has surrounded us on all sides with the media for comfort and the means of enjoyment, has followed always in the footsteps of developing mathematical thought and achievement.

The achievements of mathematics have not, however, been solely material. On the contrary, they have affected in the most profound way the development of thought itself. For the immense theoretical structures of mathematics, as they exist in our time, became humanly possible only through the characteristic of all mathematics, which lies in the progressive economization and standardization of the processes of thought. In mathematics every useful result of thought is probed and crystallized and so preserved and formulated that it may be used most conveniently for further thought. Thus is obviated the waste of repeated startings from fresh, and the energy of the mind is effectively conserved for further advance. This point has been cleverly put in the sayings that the mathematician always seeks paradoxically to get "rid of thinking by very dint of thinking," and that mathematics is that "paradise of the mind where it may enjoy the fruits of all its former labors."

The symbolism of mathematics is itself a mathematical achievement which will find a large place in any mental history of our race. It is the language of mathematics, the language of the arithmetic of the grade schools, of the algebra of the high school, of the calculus of the college and of all the higher disciplines. By refinement after refinement, by invention after invention through the ages, this symbolism has been brought to an unparalleled degree of perfection in the matters of compactness and flexibility and power. I need

refer you no further by way of example than to the marvelous simplicity of the Arabic system of numerals which we so commonly and heedlessly use, as compared with the numerals of the Romans or the literal numbers of the Greeks!

I will not bore you with any attempt to enumerate in completeness the mathematical elements of our modern life. The attempt could only be futile. Yet I might still ask who among us does not avail himself of the protections of insurance, that medium through which mathematics is so widely instrumental in the alleviations of death and disaster, or how widely we draw from the actuary's calculations a valued feeling of future provision and security. Mathematics and its ideas lie at the center of almost everything that makes life more pleasant, more interesting or more effective.

The essence of mathematics is precise thinking. As such it is the soul of all modern scientific thought. Quantitative scientific theory without mathematics would be simply unimaginable. Indeed, so true is this generally that subjects are commonly regarded as scientific only to the extent that they are mathematical. One must study much mathematics to become a physicist or an astronomer or in fact any natural scientist. But with your permission I will quote to you from a journal of social research to the effect that "the progress of social science is closely bound up with an increasing definiteness of terminology" which is "ideally represented by the mathematical symbols," that the development of social science "is largely contingent upon the mathematical technique of expressing relationships between ideas," and that "the source of further power to describe uniformities in the behavior of phenomena . . . must be sought only in the symbolic uniformity of mathematics."

"To talk sense is to talk in quantities." This saying is surely true in every serious field of human endeavor. It is as true in politics or sociology as it is in the sciences of building, of transportation or the national defense. Who would undertake to deny the assertion when I quote: "If all mathematical contributions were by some strange cataclysm to be suddenly withdrawn, the life and body of industry and commerce would collapse as by a paralytic stroke, and the tokens of material civilization would quickly perish."

Since the rôle of mathematics in the culture of our time is such as this, since mathematical elements and influences are so omnipresent and all-pervasive in our environment, what must we conclude of the rôle of mathematics in modern education? Clearly, to be entirely ignorant of this subject would be intolerable. Even in the humblest walks of life one must count and calculate. The ability to cipher has long, and by common consent, been regarded as basic as literacy, and throughout the civilized world arithmetic is an element of the education of every child. The results of arithmetical training may often be rude, but such as they are they are ever-present in the subsequent mental life of the student, and closely approach the ideal of indispensability. I venture to suppose that you might without exception agree that "to the student of social trends it is unthinkable that instruction in number should be omitted from the curriculum."

The question is a far more intricate one when it concerns the place of mathematics in education at the secondary or higher stages. Categorical assertions concerning it, moreover, such as are all too frequently made on the one side or the other, are more apt than not to be contentious rather than instructive, and so to have neither value nor conviction. For at this stage students may no longer be regarded as all conforming to one and the same mold, and assertions or reasons which may be appropriate and convincing when applied to the one may want all aptness or bearing in the

case of another. The importance of mathematics, and for that matter the importance of any subject, ceases to be an absolute one, and must be judged relatively to the student's educational program as a whole. In continuing our discussion, therefore, it is essential that we differentiate between students with different aims and different interests. It has seemed to me that for our present purposes they fall mainly into three categories, which will bear separate consideration. I have in mind, firstly, those students for whom the rôle of mathematics is that of a professional requisite; secondly, those students for whom it is a subject of culture; and, lastly, those students who find in mathematics a strong vocational or avocational interest.

Mathematics is a professional requisite, in the sense I now have in mind, for those students who would use it mainly in the secondary rôle of an instrument for the acquisition of other knowledge. As a class such students are bound for education at the higher levels of the college or the university, but it is one of the functions of the secondary school to prepare them suitably for their later needs. The bases of these needs are in the first place a proper training in the elements of algebra and geometry. These subjects are not taught in the university nor should they be. They are well within the intellectual grasp of students at the high-school stage, and to delay their study would prove wasteful to the extent of being educationally inexcusable. For the development of mathematical habits of thought, the acquisition of mathematical facts and the attainment of mathematical skills above all require time. As tools they can be used effectively only when their use has to a large extent become automatic. Their preparation may not be put off with impunity, therefore, to the time when serious applications are imminent.

To give professional training in any narrow or specific sense, is, of course, not a function of the high school. Mathematics as a professional requisite, however, is such in the very broadest of senses. With the exception, perhaps, of the use of the mother tongue, no other subject is so widely or insistently needed in so many fields of intellectual work. Nor are the relations of these fields to mathematics always superficially evident. On the contrary, there is every reason to believe that they are all too frequently beyond the appreciation of students, and that even many teachers are not so completely aware of them as they should be. The error of an early neglect of mathematics may be and often is discovered with surprise when the time for a convenient or even a possible recovery has been passed. The student, himself inexperienced, has every right to demand an educational guidance which safeguards him from such belated discoveries.

The point which I am here trying to make has to large extent been safeguarded in the past by the requirement of mathematical preparation for general admission to the university. In Wisconsin this has been recently changed, though even in this change the rôle of mathematics has been given a renewed emphasis. At the instance of the administrators of our secondary schools the university undertook in the past year a survey of the mathematical needs for study in each of its many departments. The blanket requirement of mathematics for all students was to be exchanged for a requirement applicable where and only where needed, and to determine this need each department was requested to consider whether or not mathematics was to be regarded as a professional requisite for its work. The result of this poll is significant in the extent to which it showed the high-school mathematics to be vital and concretely essential. It was judged to be requisite for all students in the Colleges of Agriculture and Engineering, and to be

indispensable for all serious study in astronomy, biology, chemistry, commerce, economics, geology, mathematics, medicine, pharmacy, physics, physical geography, philosophy, political science, psychology and sociology.

The inclusion of so many of the social studies in this list of fields in which mathematics is needed will not, I venture to suppose, have been entirely expected by every one. Yet it is in complete accord with a recent action of the National Social Science Research Council, which in 1932 felt the matter of mathematical training to be of sufficient urgency and moment to appoint from its members a Committee on Collegiate Mathematics Needed in the Social Sciences. The question here was not whether the algebra and geometry of the high school could be dispensed with, but to determine how much more mathematics was requisite. In its report the committee recommended that training in logarithms, in graphs, in interpolation, in curve-fitting, in probability and in the differential and integral calculus be made a requirement for all serious students of social science. I should like also to read to you from this report the following statement: "There is need in nearly every institution doing graduate teaching or research in the social sciences for at least one staff member actively engaged in social science work whose mathematical training is the equivalent of what might be required for a doctor of philosophy degree in mathematics and statistics." It would be my conclusion from these facts that mathematics is entitled to a rôle, and, moreover, to a rôle secondary to no other subject, in any school which does not avowedly disclaim as one of its functions the preparation of students for further study.

I would turn your attention now to a consideration of those students for whom mathematics is not a subject of professional interest but one of culture. Of this category many students will terminate their formal education at graduation from the high school, or even before, though some will aim toward university careers in the fields of literature, languages or other subjects remote from the scientific. For students of this class mathematics, as a desirable element in their education, must be judged to be so on general cultural grounds. The question of this desirability is at present unfortunately not free from controversy. Any discussion of it inevitably hinges upon considerations which are often indirect and subtle, and I am aware that even in the present instance the amount of conviction which I may bring you will depend in large measure upon the receptiveness which you may be willing to extend.

There is to be heard currently a clamor not inconsiderable for at least a partial displacement of the traditional mathematical subjects in the curriculum of the secondary school. Why, it is asked, should one study mathematics when one does not expect to use it? This is the question to be answered, and in answering it I am aware that I shall in large measure be answering also the equally justified questions: Why should one study literature or history or any subject which is not primarily one of utility? The answer, it seems to me, must be somewhat as follows.

The claim of a liberal education to consideration as a worth-while enterprise must be based not upon any material advantages which it may assure to its students, but upon the enlargement which it brings into their lives. The primary purposes of teaching the liberal subjects must, it seems to me, be the production of a background for an intelligent insight into our environment, and the development of abilities to understand and appreciate the salient elements of our culture and their human significance. Our civilization, as I have already tried to indicate to you, is

saturated with mathematical elements, and mathematical thought is profoundly involved in the vast array of current civilizing forces. It is neither necessary nor desirable that every one should be made into a trained mathematician. But it is desirable, indeed it is a part of general enlightenment, that in so far as possible the realization of every one be awakened to the existence and nature of any dominating influence in the world in which we live. The rôle of mathematics in the evolution of this world has been of unsurpassed importance. Yet who shall say that its importance in the past is not to be outranked by its potentialities for the future.

In the immediate present the influence which above all others is characteristic of our age is the influence of science. With this influence no one can escape continual contact. Even our newspapers and other current reading are constantly filled with it. And yet the soul of science is mathematical, its ultimate essence is invariably precision in quantitative thought. To have no familiarity with such thought, and to have had no contact with it, must for any intelligent person represent a modicum of failure in the completeness of his adjustment to his surroundings. Whether he be conscious of it or not, the fact is certainly one which must inevitably handicap and baffle his attempts to appreciate the motivations of those who lead in the development of our culture.

But, you may ask, does the study of elementary mathematics contribute in any appreciable way to the attainment of such results? Does it in fact enlarge the capacity for appreciation of the nature and importance of scientific and technological achievement? I am firm in the belief that it does, and this for the following reasons: In the first place, I see no other way by which such results are to be attained. Mathematics has many characteristics which are not shared by other subjects. In the second place, I believe that there are many teachers of mathematics who themselves have this power of appreciation and understanding, and who keenly and sincerely desire to awaken it in their students. They are, by and large, teaching mathematics in the best way they know how. Our courses, as they are now framed, are, to be sure, undoubtedly not above improvement, but their improvement is a subject of continual study and is certainly going on as rapidly as the serious thought of many serious workers has been able to make it.

To teach mathematics, even to teach elementary mathematics, is to teach clear and rigorous thinking. There can, I suppose, be no dispute that habits of clear thinking are desirable or that they are a mark of culture or that their development has a legitimate place among the purposes of our schools. But the goal of rigor in thought is not an easy one to attain. To do so requires the patient expenditure of effort and energy, and the attainment of results is above all gradual. It is certain that the accomplishment is not to be won either by reading or by hearing about it. Through contact and practice alone is it to be achieved, and this, it seems to me, is in itself no mean justification for the teaching of mathematics in our schools of the secondary grade. To be sure, the training is hard, for after all there is no royal road to a development of the power to reason rigorously. The mathematics class is certainly of all places the last for rambling speculation which disregards either knowledge or fact, and mathematics is not the subject in which light-hearted tasting or sampling can find a place. But if the whole mental system of the student is to be regarded, there is in our present scheme of education a place which can be filled and filled best by mathematical study. Such study has a definite and characteristic contribution to offer, and this applies, it seems

to me, to those students who are to leave school early as surely as it does to those students whose education is to be more extended. A student, though he may never make either any extensive or any profound use of mathematics, and though the formulas and rules may soon be forgotten by him, nevertheless may carry away with him through life some measure of a more enlightened conception of the nature of precise thought, and at least some elementary realization of the rôle which the analysis of quantity plays in our present-day world. It has been said, very aptly it seems to me, that "there are things intellectually practical as well as things materially practical." I believe this, and I believe also that it would be an unpardonable mistake to allow the latter to displace the former from their place in general liberal education. It is my conviction that the ultimate residue of even an elementary mathematical training may, even on cultural grounds alone, be accountable in the end as intrinsically far more practical than the study of many subjects which seem superficially to be of more immediate utility.

I have still to consider the third of my categories of students. It comprises neither a majority nor even a large minority of the whole, but those which it does include are those to whom I may be pardoned for giving the kindliest of considerations. I speak now not of those students for whom mathematics is a tool, and not of those who, because they are of eager minds, find worthy the quest after potentialities for an appreciation of the forces of our cultural evolution, but of those students who find mathematics interesting solely for itself and for no ulterior reason. Such students, and I use the term now in the broad sense in which we are all students, have existed and followed each other in an unbroken succession through more than thirty centuries. They have existed from that early time when men first discovered that intellectual life need not be irksome, but could be pleasant, exhilarating and satisfying. A natural partiality for mathematics, though it may often be initially mild, is far from being uncommon. Under cultivation it may unfold itself into a well-spring of ever-increasing mental enjoyment, which in the case of some grows into a positive source of intellectual fascination. Such students, whether or not they may be destined or mentally endowed to become pure mathematicians of a creative order, see in mathematics the ideal and most highly perfected activity of the human mind—the pinnacle to which human reason and deduction have attained. For them mathematics is no scientific handmaiden, it is the queen of the sciences, and though they will gladly acknowledge that mathematical applications have often in themselves been achievements which are monuments to human vision and ingenuity, yet they will never admit that applications are more than very subordinate considerations where mathematics itself is concerned. As one has said it, "uses resemble excuses," "they wear an aspect of apology, and savor a little of a plea in mitigation which one must plead before people incapable of appreciating anything else."

The origins of mathematics may have been lowly and its data originally crude, and, for that matter, who would gainsay it that mathematics still is and has always been generally intertwined with the lowliest and most pitiable activities of life's routine. Such facts, however, can but add to the glory of a subject which has never failed to challenge the mind, and in the reflection upon which the mind has always found an object worthy of its mettle. From such reflection the intellect created mathematics as a world of its own, a world apart from that of experience, one from which contradiction and chaos are for all time barred. In this world the creative power of the imagination, freed from the

shackles of physical experience, remains subservient only to reason and logic and the requirements of self-consistency. To such an extent has beauty from the very beginning been the touchstone of value in this world that even in the golden age of Athens and Alexandria mathematics had reached the status of a fine art.

The golden age of Greek culture was no less a golden age of mathematics. Yet it was but one such golden age, for mathematics is not a dead and antiquated subject of the past, it is a living subject of all ages, of the present and of the future. For, who shall say that we at the present are not still in the golden age of Newton and Euler and Gauss and Weierstrass, or that this age does not even exceed in brilliancy that former great age of Pythagoras and Euclid and Archimedes?

The onward march of mathematical research and production at the present time is perhaps one of the most dramatic features of modern intellectual life. While, on the one hand, the pure mathematician instigates revolutions of scientific theories by his achievements of emancipation from age-old preconceptions and prejudices, the scientist, on the other hand, finds his need of new and extended mathematical theory so insistent that he must often himself assist in its production. Fellowship in this great world of activity was hardly shared by our country as recently as four decades ago. Now we maintain here as many as four journals solely devoted to the publication of pure mathematical research, while almost all scientific journals are simply filled with mathematics.

It is hardly surprising, in view of all this, that the great theoretical structures of mathematics are vast beyond description, and that they are no less than labyrinthian in their ramifications and interconnections. One finds among them great edifices of algebras of many kinds, of geometries—of synthetic geometry, of differential geometry, of projective geometry, of hyperbolic and elliptic and Euclidean geometries, etc., etc. There are great and intricate theories of innumerable kinds—theories of equations and of differential equations, theories of aggregates and of groups, theories of transformations and of functions, theories of numbers and of infinites, etc. And in all these theories there is continual growth, and their future can no more be predicted than the Egyptians of antiquity could have guessed that their simple notions of number would in our time have grown into the notions of integral numbers, of rational numbers, of negative numbers, of real numbers, of complex numbers, of ideal numbers, etc.

The aims of mathematicians are at once the extension of all mathematical theories, the deepening of their foundations, and their closer amalgamation. Their genuinely universal language makes possible a truly international cooperation in this purpose, and through the modern facilities of publication knowledge of any significant advance passes rapidly into the possession of scholars scattered over the entire civilized world. Regardless of race, these scholars find their work a common source of esthetic intellectual enjoyment and are almost solely motivated to their labors by the sheer joy of invention and discovery. They are, by and large, craftsmen of consummate skill, and masters of difficult and intricate techniques. But many are much more than that, they are artists in the truest sense of the word, for they see beyond immediate details and construct with a constant eye to the harmony and the unity and the beauty of the whole. Without an immanent beauty which is generally recognizable no mathematical theory ever long escapes oblivion. Though correctness as such is always essential, it falls immeasurably short of conferring real value or permanency.

I must pass on from this poor attempt to describe to you the domain of mathematics as it reveals itself to those who by vocation or avocation devote themselves to its cultivation. It is a realm of abstractions indeed, and yet some crystallization of these abstractions in the form of a concrete application is to be found without exception at the basis of every great achievement of technology or science. In closing this discussion then may I recapitulate for you again the reasons upon which I would claim for mathematics a rôle of primary importance in modern education. Firstly, it is perhaps the most general of all professional requisites, and as such as indispensable for all serious study in a majority of the fields of modern learning. Without it, in any of these fields, one is always the servant and never the master. Secondly, it has been, and promises fair to remain, an all-pervading ingredient of our current civilization, which no person of culture should wish to have ignored. Lastly, it is in itself one of the highest, if not the highest, achievement of abstract human thought, which is capable of bringing to those who devote themselves to it an appreciation of intellectual beauty, an enjoyment of sharp and rigorous thinking, and a contact with the crystallized product of many of the greatest minds of times past.

EDUCATIONAL EVENTS

THE EXCLUSION OF JEWISH CHILDREN FROM THE PUBLIC SCHOOLS OF GERMANY

A DISPATCH to *The New York Times* states that, according to an announcement by Dr. Gross, head official of the Race Bureau of the Nazi party, the exclusion of Jewish children from the public schools of Germany and their transfer to special Jewish schools is the next point in the government's program.

"The presence of children of strange races in the classrooms must inevitably increase the difficulties of instruction," the declaration said. "Therefore we must demand that the children of foreign races, notably Jews, be separated from other children."

He also asserted that schools and universities would have to shorten considerably their courses of study in order to allow young "Aryans" to marry earlier. He said that "the schools and universities will have to recognize that the preservation of valuable talents [through early marriage] will justify an intelligent shortening of the courses of study. The nation is losing such talents to-day through late marriage. The nation, in fact, is losing generation after generation."

The introduction of Hitler Youth training, labor and Storm Troop service and military service, together with the use of the first two years of university courses chiefly for "National Socialist training" and "racial science," already have shortened considerably the time devoted to school subjects and ordinary university studies.

As Jews have been shut out by Nazi organizations, complaints have been heard that they were advancing more rapidly in school than "Aryan" children.

FIELD STUDY IN THE FAR EAST

As part of their educational program, a group of graduate students at Teachers College, Columbia University, will visit China and Japan during July and August this summer, with Professor Benjamin R. Andrews, of Teachers College, in charge. The students, most of whom are college or high-school teachers of economics, will make a first-hand study of home and family life in Japan and China.

The party hopes to see something of homes and their surroundings and the distinctive contributions of the Orient to the arts of living. Women's contribution in the family and in the community, child welfare, health, housing and social and educational aspects of the family will be studied.

Dr. Andrews believes that "through this first-hand contact with a foreign culture, we are sure to find new knowledge and new stimulus at a hundred points in our own field of professional responsibility. One of the personal discoveries

of such field study is that students are led to think more deeply and from new angles on their own problems. Students return to America, after a trip abroad, with new conceptions of the life and culture of the people visited."

The itinerary of the Oriental Field Study course will provide a day's conference at Honolulu with leaders of home economics education, and a fortnight or more in Japan and China. In Tokyo this group of women teachers will live at the Young Women's Christian Association hostel in constant contact with individuals and groups interested in the problems and activities of modern young women of Japan.

The members will also attend, for a week, the lectures of the Oriental Summer College at the University of Tokyo. There will be contacts with leaders in progressive social movements, visits to homes and informal conferences with teachers and others concerned with the interests of women.

In addition to giving attention to the education of girls and women, the group will study conditions affecting women and the family, as in matters of homemaking, employment and professional service, health, child welfare and other current problems. After ten days in the Tokyo area, the group will visit Kyote, Osake and then proceed to Seoul, Korea, *en route* to Mukden and Peiping. Following this it will proceed to Nanking and Shanghai for visits to educational institutions and conferences with leaders.

Dr. Andrews says:

> These American teachers will aim to broaden their appreciation of the part that women are taking in the life of various countries and by personal and professional contacts, contribute to mutual understanding. Their purpose will be primarily professional, the broadening of their own interests and increased competency for their own work.
>
> This group will modestly aspire to be merchants of light, as Bacon described their function in the "New Atlantis," going abroad to secure new ideas for the home land and ready to give, where they can, such merchandise in exchange. Charles A. Beard, who knows the Far East at first hand, urged Americans recently to add to their cultural heritage contributions from the Orient.
>
> This we trust may be one of the outcomes of the Oriental Field Course for American home economics teachers.

THE INAUGURATION OF NEW ADVANCED STUDIES AT YALE UNIVERSITY

A NEW type of advanced study will be inaugurated at Yale University with the establishment of a division of graduate studies in the Graduate School. Students admitted to this division, which will begin with the next academic year, will have a broader range of study than that provided in the programs now sponsored by the individual departments. The new division, which will cut across departmental lines, will be directed by a committee on general studies, which will draw upon all the resources of the university in adjusting programs of study to meet the individual needs of its students.

This new and broader type of advanced study is not aimed at the training of investigators; it is designed especially to prepare individuals for professional service in less conventional types of educational enterprises. It will be open to librarians, museum docents, forum leaders and others engaged in the general field of adult education. A few fellowships for this group will probably be available for 1935–36.

It is thought that this training will also be useful for students who wish to prepare for teaching careers in colleges and secondary schools, but who are not interested in the predominantly research training represented by candidacy for the Ph.D. degree.

The committee on general studies is interested in providing a program of study for college graduates who do not intend to follow a scholarly career in the field of research, but who have a definite desire to carry their education beyond the bachelor's degree. Study in this division may lead to a master's degree, but the student is not required to stand as a candidate for any degree.

The present membership of this committee consists of Professor C. F. Tucker Brooke, English; Professor Francis W. Coker, government; Dean Henry S. Graves, forestry; Professor Clyde M. Hill, education; Professor Arthur J. Hill, chemistry; Professor Richard S. Lull, paleontology; Professor Allardyce Nicoll, drama; Professor Charles E. Rush, library; Professor Theodore Sizer, fine arts, and Professor Edward S. Robinson, psychology, chairman and director of graduate studies.

GRADUATE SEMINAR FOR TEACHERS AT REED COLLEGE

REED COLLEGE is announcing a fifth year for secondary-school teachers. This is planned to meet the growing demand for fuller preparation for the teaching of adolescents, especially in public high schools. Certain states, including California and Washington, now require a fifth year for high-school certification, and other progressive states, including Oregon, are seriously considering similar action.

The seminar will be limited to a small number —probably ten to twelve—at least during the first year. The work will be definitely on graduate level, with much attention to varying individual needs and wide opportunity to meet these needs. The whole group will meet regularly in an educational seminar, with the guidance of leading members of the faculty in various fields. Practical work will be offered including supervised teaching in high-school subjects and will give opportunity for contact with administration and executive operations. A course in advanced educational psychology is planned to open up the most important bearings of modern psychology upon instruction, educational guidance, personal development and other aspects of the high-school problem. Opportunity will be offered to each member to expand and enrich his command in the high-school subjects he is to teach.

The teaching staff will be drawn from the faculty as a whole, the following members taking a leading part: Dr. Dexter M. Keezer, president of the college and professor of economics; Dr. Edward O. Sisson, director of the seminar; Professor William Griffith, psychology; Assistant Superintendent Norman C. Thorne, of the Portland schools, lecturer in education; James T. Hamilton, director of admissions. Other members of the faculty and experts from outside the college will participate.

The college is prepared to devote the best energies of its staff and equipment to this new enterprise. The seminar will have the benefit of the advanced and progressive methods already in effect and its sponsors believe that the project will make a marked contribution to the problem of the better preparation of secondary teachers.

THE CHICAGO ANNUAL PASTORS' INSTITUTE

BROADENING of the program of the annual Pastors' Institute to include lectures in science, economics, visual education and archeology, but retaining major emphasis upon studies of special interest and value to active pastors, has been arranged by Associate Professor Charles T. Holman, director.

The institute, which is conducted under the joint auspices of the Divinity School of the University of Chicago, the Chicago Theological Seminary and the Disciples Divinity House, will be held on the university quadrangles from July 29 to August 4.

There will be a series of evening lectures, which include a lecture by Dr. Arthur H. Compton, professor of physics at the university, a Nobel prize laureate, on "The Quest of the Cosmic Ray," and one by Professor Paul H. Douglas, who will speak on "Legislation for Social Security."

The newer techniques developed in visual education at the University of Chicago will be illustrated by the use of five of the series of talking motion pictures made for use in the "New Plan" instruction in the sciences. The famous film of the Oriental Institute, "The Human Adventure," which shows the work of the expeditions in the Near East, also will be shown to the pastors.

Twelve intensive courses of study in the Bible, pastoral work, the philosophy of religion and similar subjects will be offered by distinguished visiting professors and by leading members of the faculties of the schools concerned. Among the guest instructors will be Professor R. L. Calhoun, of Yale University, and Professor Carl S. Patton, of the Pacific School of Religion, Berkeley, California, moderator of the National Council of Congregational-Christian Churches.

Dean Edward Scribner Ames, of the Disciples Divinity House, will conduct one of the courses. The Chicago Theological Seminary professors who will lecture are A. T. Boison, Robert Cashman and A. E. Holt. The Divinity School of the University of Chicago will be represented by Professors A. G. Baker, W. W. Sweet, H. N. Wieman, W. C. Bower and D. W. Riddle.

In addition to the lectures and program of study there will be conducted sociological tours

to various Chicago neighborhoods and institutions. Provision will be made for visits to the Museum of Science and Industry, the Adler Planetarium, the Field Museum, the Shedd Aquarium, the Art Institute and the Chicago Historical Society.

The institute will open with a service of worship in the University Chapel at which Professor Henry Nelson Wieman will be the preacher. Morning devotions will be conducted daily in the chancel of the chapel.

A nominal registration fee is charged, and entertainment will be provided at moderate cost at the university and seminary residence halls.

APPRENTICESHIP TRAINING

The Christian Science Monitor reports that more than forty states have set up committees to carry out the administration's plan for young people to be placed in industries as apprentices. Three states—Wisconsin, Michigan and Tennessee—have contracts already prepared which are to be used by apprentices and their employers. It is said that about twenty of the states had submitted plans for apprenticeship training which had been approved.

Many are unemployed because they have never learned a skilled trade. It is said that if they were actually trained to be welders or auto mechanics, skilled tool makers or building tradesmen, or qualified in other skilled trades, they would have a much better chance of getting employment.

According to Frank Cushman, a member of the federal committee on apprenticeship training and chief of the Industrial Education Service in the Office of Education:

> The whole situation has come about because this country has looked to Europe in the past for its skilled tradesmen. We have received our machinists more or less from Belgium and Germany, our stone cutters from Italy and France, our carpenters and cabinetmakers from Scandinavia and Scotland. In the meantime our young people have been training to be lawyers and bankers, and to enter other professional white collar jobs.
>
> Now, with immigration cut off, we must fall back on ourselves and train some of our own young people to be skilled tradesmen. At the present time, according to figures compiled in the Office of Education, we actually know that there are far more people doing skilled work in industry who are over 60 than under 20.
>
> These facts, along with the increased demand for skilled workers, have turned the attention toward a national apprenticeship program. Each state committee includes in its membership an NRA compliance board, representatives of the United States Employment Service, of the State Department of Labor, State Department of Education and an equal number of representatives of employers and organized labor.
>
> We must discriminate between child labor which results in exploiting boys and girls in industry on the one hand and legitimate opportunity for young people to learn to work on the other.
>
> Vocational schools all over the country are being crowded to the doors with high school graduates and even college graduates who have become convinced that they can't get skilled labor jobs without training.

CHILDREN'S PROGRAMS BY THE COLUMBIA BROADCASTING COMPANY

THE Columbia Broadcasting Company has announced a new standard to be set in children's programs by prohibiting entirely certain types of treatments specified under eight different headings. To this end they are engaging the services of a child-psychologist who will have the benefit of an advisory board of qualified members, with the special purpose of pointing the way toward programs designed to meet the approval of parents, children and educators alike. The new policy becomes completely effective on July 30.

Eight specific themes and dramatic treatments which are not to be permitted in broadcasts for children are:

> The exalting, as modern heroes, of gangsters, criminals and racketeers will not be allowed.
>
> Disrespect for either parental or other proper authority must not be glorified or encouraged.
>
> Cruelty, greed and selfishness must not be presented as worthy motivations.
>
> Programs that arouse harmful nervous reactions in the child must not be presented.
>
> Conceit, smugness, or an unwarranted sense of superiority over others less fortunate, may not be presented as laudable.
>
> Recklessness and abandon must not be falsely identified with a healthy spirit of adventure.

Unfair exploitation of others for personal gain must not be made praiseworthy.

Dishonesty and deceit are not to be made appealing or attractive to the child.

In making this list public, it is stated:

Wide variations in viewpoint exist among parents as to programs which they regard as suitable for their children to hear, and similar differences exist between parents and children. The same divergence of opinion is frequently found among authorities.

Commercial sponsors of broadcasts addressed to children are devoting great effort and much money to creating programs that merit the approval both of child and parent. It is true that there have been instances of poor judgment and careless execution. To eliminate such faults would be gratifying to all those who feel a deep responsibility for the rearing and education of impressionable youth.

The Columbia Broadcasting System has no thought of setting itself up as an arbiter of what is proper for children to hear; but it does have an editorial responsibility to the community, in the interpretation of public wish and sentiment, which can not be waived.

We realize that distinctions in esthetic values and feeling which may be wholly obvious between two given treatments of dramatic material can not always be easily specified in words. Thus, for instance, it is not easy to capture in definition the fine distinctions between the pure fantasy which comprises some of the world's greatest literature for children, and the fantastic distortion of realities which is unsuitable for a youthful audience. None the less, the differences between these forms of entertainment become rather obvious when the two are compared side by side.

A program for children of elementary school age should offer entertainment of a moral character in the widest social sense. It should not obtain its entertainment value at the cost of distorting ethical and social relationships in a manner prejudicial to sound character development and emotional welfare.

In general, it is worth noting that the literature for children which continues to find their favor through many generations offers heroes worthy of the child's ready impulse to hero worship, and of his imitative urge to pattern himself after the hero model. Such literature, whether created a hundred years ago or written to-day, succeeds in inspiring the child to socially useful and laudable ideals such as generosity, industry, kindness and respect for authority; it opens doors into wide worlds that may be reality or fantasy, but are in neither event ugly or repellent in aspect; it serves, in effect, as a useful adjunct to that education which the growing and impressionable child is absorbing during every moment of its waking day.

It is our hope and purpose to stimulate the creation of a better standard in children's programs than has yet been achieved.

THE MEETING OF THE SCHOOL GARDEN ASSOCIATION

AT the twenty-fifth annual luncheon of the School Garden Association, held in New York City on May 12, Dr. Harold G. Campbell, superintendent of schools of New York City, recommended an extension of nature study in the schools. He said in part:

Conservation of nature is a subject of ever increasing importance. Children should be taught the proper use of our natural resources. Practical conservation must emphasize the saving of useful plants and animals which are in danger of destruction.

The nature courses in the schools aim not only to teach the commonplaces of nature but to endow pupils with the correct attitudes of appreciation and with a desire to care for all the natural features left in our city.

Attainments in nature teaching must not be lost. Our school gardens must be cultivated, our classrooms made alive, our nature rooms manned, our school grounds beautified and our great natural institutions used to the utmost.

Every school should have a laboratory of nature as a school garden. The school is the first agency in the community required to teach the child useful world knowledge. When every school has a garden we may vision a future of self-supporting, self-perpetuating and beautified country.

Associate Superintendent John S. Roberts spoke along the same lines. Mrs. John W. Paris, founder of the Federated Garden Clubs of New York State, said that the garden-club movement is increasing throughout the country and that the clubs are gaining in influence and importance to an extent that can hardly be overestimated.

A medal for outstanding achievement in nature teaching was awarded to Susan M. Squirer, nature curator of P. S. 165, Manhattan.

Van Evrie Kilpatrick, director of the association, was presented with a gift in recognition of his work in promoting nature study.

EDUCATIONAL NOTES AND NEWS

DR. CHARLES C. MCCRACKEN, for the past five years president of Connecticut State College, has submitted his resignation to the board of trustees. He will assume on September 1 the post of educational counselor for the Presbyterian Board of Christian Education. His principal work will be to assist the fifty-three Presbyterian colleges to interpret their educational policies and to give them assistance in the field of administration and curriculum.

JAMES DUGAN, assistant superintendent of the schools of Cambridge, Mass., has been appointed president of the State Teachers College, Lowell, Mass. He succeeds Clarence M. Weed, who will retire on July 1.

CLARENCE C. STOUGHTON, dean of the Wagner Memorial Lutheran College, Staten Island, N. Y., has been named president. He succeeds Dr. Herman Brezing, who is now director of the Wartburg Orphan Farm School at Mount Vernon, N. Y.

RAPHAEL JOHNSON SHORTLIDGE, formerly head master of Tome School, Port Deposit, Md., who has become head master of Pawling School, New York, succeeds Frederick Luther Gamage, Jr., who has been head of the school for the last three years. Dr. Frederick Luther Gamage, founder and long head master of the school, will remain as head master emeritus and chaplain.

DR. WILMOT R. JONES has resigned as principal of the Sidwells' Friends School at Washington to become principal of the Friends School in Wilmington, Del.

DAVID STYER, vice-principal of the Bordentown Military Institute, New Jersey, has been appointed principal of the school. He succeeds Brigadier General Thomas D. Landon, who died on October 29, 1934.

H. B. WYMAN, formerly principal of several different schools in Ohio, has been appointed dean of the Phoenix (Arizona) Junior College. He will serve this summer as visiting professor at the State College for Teachers, Albany, N. Y.

DR. WALTER EUGENE CLARK, Wales professor of Sanskrit at Harvard University, has been appointed master of Kirkland House, to succeed Edward Allen Whitney, associate professor and tutor in history and literature, who resigned recently as master because of poor health.

PROFESSOR WILLIAM C. DE VANE, formerly of Yale University, has been appointed head of the department of English at Cornell University, where he has been teaching during the present academic year.

DR. HERBERT SPENCER JENNINGS, professor of zoology and director of the Zoological Laboratory at the Johns Hopkins University, has been appointed George Eastman visiting professor at the University of Oxford, for the academic year 1935–36. He succeeds Dr. Arthur H. Compton, professor of physics at the University of Chicago.

DR. HENRY B. LONGDEN, professor of German at De Pauw University, will retire in June. He became a member of the faculty in 1881, and was at one time acting president of the university.

DR. J. PERIAM DANTON, formerly assistant to the secretary of the American Library Association, and for the past two years holder of a Carnegie fellowship for research at the Graduate Library School, University of Chicago, has been appointed librarian and associate professor at Colby College, Waterville, Maine. Dr. Danton will take up his new duties about August 1.

DR. GEORGE J. RYAN, president of the Board of Education for New York City, was reelected president for the fourteenth term at the annual meeting of the board on May 14.

THE University of Kentucky has announced that four school superintendents will teach during the coming summer session of the university. They are: Frederick Archer, Louisville; L. C. Caldwell, Catlettsburg; Henry H. Hill, Lexington, and Glenn O. Swing, Covington.

DR. J. FLINT WALLER, principal of the Lyndhurst, N. J., High School, submitted his resignation on May 16, effective on June 30.

DR. FRANK G. PICKELL, superintendent of schools at Montclair, N. J., has been appointed a member of the executive committee of the Department of Superintendence of the National Education Association. He succeeds Dr. Charles

S. Meek, formerly superintendent of schools at Toledo, Ohio, who has resigned.

DR. ROSCOE R. HILL, formerly research specialist of the Manuscripts Division of the Library of Congress, has been appointed chief of the Division of Classification of the National Archives.

DR. ANDREW FLEMING WEST, dean emeritus of the Graduate College of Princeton University, celebrated his eighty-second birthday on May 17.

A PORTRAIT of Dr. Henry Johnson, professor emeritus of history at Teachers College, was presented to Columbia University on May 14 by Dr. Dixon Ryan Fox, president of Union College, on behalf of Dr. Johnson's students and associates.

AN Associated Press dispatch reports that Pope Pius received in audience on May 16 Dr. William F. Russell, dean of Teachers College, Columbia University.

DR. FRED P. CORSON, the newly inaugurated president of Dickinson College, Carlisle, Pa., addressed a meeting of the Washington alumni on May 14.

DR. JOHN L. NEWCOMB, recently elected president of the University of Virginia, was the guest of honor at a dinner given by the alumni at Baltimore on May 17.

MARY RITTER BEARD delivered the Catherine Milligan McLane Lecture at Goucher College on May 21.

DR. FREDERICK B. ROBINSON, president of the College of the City of New York, was the principal speaker on May 10 at the eighty-eighth anniversary of its founding. A portrait of Alexander Stewart Webb, second president of the college, was unveiled during the ceremonies.

DR. SAMUEL ATKINS ELIOT will deliver the baccalaureate address for the graduating class of the University of Illinois on June 9. Dr. Eliot is the son of the late Charles William Eliot, formerly president of Harvard University.

DR. HAROLD CLAYTON UREY, professor of chemistry at Columbia University, the 1934 Nobel prize laureate in chemistry, will give the commencement address at the State University of Montana on June 3, when the degree of doctor of science will be conferred upon him. Dr. Urey is a graduate of the institution.

PROFESSOR FREDERICK E. BOLTON, emeritus dean of the School of Education of the University of Washington, delivered the commencement address at the University of Alaska, Fairbanks, on May 20.

DONALD R. RICHBERG, chairman of the National Industrial Recovery Board, will be the speaker at the commencement at Knox College on June 12.

THE baccalaureate sermon at the University of Kentucky will be delivered on May 30 by Dr. Arthur Braden, president of Transylvania College.

DR. HENRY E. BOURNE, professor emeritus of history at Flora Stone Mather College, now consultant of the Library of Congress, will give the convocation address at Western Reserve University on June 12.

"THE University Graduate and the American Future" will be the title of the commencement address at the University of Wyoming, Laramie, to be given on June 10 by Joy Elmer Morgan, editor of the *Journal* of the National Education Association, and chairman of the National Committee on Education by Radio.

DR. HERMANN COLLITZ, who was professor of Germanic philology at the Johns Hopkins University for twenty years prior to 1927, when he was made professor emeritus, died on May 13 at the age of eighty years.

THE REV. DR. WILLIAM EDWARD SOOTHILL, professor of Chinese at the University of Oxford, died on May 14 at the age of seventy-four years. He had served for four years as president of the Imperial University of Shansi Province and at his death was president-elect of the proposed University for China. During 1928 Dr. Soothill was visiting professor at Columbia University.

THE Committee on the Orientation of Secondary Education, of which Professor Thomas H. Briggs, of Columbia University, is chairman, recently held at Asheville its fifth one-week meeting. The criticisms by some seventy professional

groups and individuals of the tentative report on the issues of secondary education were reviewed, and plans were laid for presenting the final report next February. Dr. Will French, superintendent of schools at Tulsa, Okla., and chairman of the Curriculum Commission of the North Central Association of Colleges and Secondary Schools, has been added to the committee.

THROUGH a bequest made by Miss Alice G. Chapman, for many years trustee of the Milwaukee-Downer College, who died on April 27, the college receives $1,000,000. By the terms of her will, $200,000 will be used to set up a perpetual trust fund, the income from which is to be used to augment the salaries of the faculty; $50,000 is to be set aside for the construction and maintenance of a home for the president of the college, and the remainder is to be used for the construction and maintenance of a library or an auditorium which is to bear the Chapman name. In addition Miss Chapman left to the college a fine collection of teakwood, antique furniture and oriental rugs.

THE Texas Supreme Court has given title to the state to the minerals in 3,901,000 acres of school land, some of it in productive oil territory, increasing by potential millions the wealth of the public free school fund. The court ruled that the state retained title in all minerals in school land forfeited and repurchased under an act of 1925 and was entitled to half the bonus, rentals and royalty from oil development. Under the decision, the state will collect $500,000 to $1,000,000 now due, will retain another $1,000,000 paid into the treasury under protest during pendency of the suit and will receive more from future development. Ralph W. Yarbrough, formerly assistant attorney general who handled the case, said that he believed the ultimate revenue which would accrue to the school fund would be nearly $20,000,000. The school fund now holds securities with a par value of about $46,000,000. The income is used for current operation of the school system.

JAMES MICHAEL CURLEY, governor of Massachusetts, over the objection of Payson Smith, State Commissioner of Education, on May 13 signed a bill requiring display of the American flag and a pledge to it by instructors and pupils in the public schools of Massachusetts. Legislation is still pending requiring teachers and instructors in educational institutions to take the oath of allegiance to the United States. According to *The Boston Transcript,* the governor in signing the bill declared that if there were any parents who objected to having their children take the pledge, they could remove them from the public schools and enter them in private institutions. In the case of the teachers, he stated that they have no place in the schools if they object to pledging allegiance to the flag of the country which is safeguarding them and that if they do not want to take the pledge the sooner they can sever their connection with the schools the better it will be for those institutions, for the pupils and for the country.

STUDENT leaders at the University of Wisconsin, representing practically every important student activity at the university, have formed an all-university student committee for the purpose of launching an active defense program in behalf of the university to "counteract the misrepresentations against the University of Wisconsin spread through the scurrilous and unwarranted attacks made against our university." Nineteen students make up the group, which has been given the name "Committee of Nineteen." At its first meeting, the committee favorably acted upon a resolution, which is as follows: "Be it resolved that we, representative students of the University of Wisconsin, unite in refuting the recently publicized charges of immorality and radicalism about the university. Ordinarily we should consider it entirely unnecessary to issue any statement on subjects of this nature as we know that these charges have very little or no foundation. However, with vicious and entirely misleading stories appearing in certain sensational newspapers, we feel it our duty to the University of Wisconsin and to the people of the state to inform them that the university to-day is more truly American than the men and institutions attacking it. As students, we feel that we know conditions more intimately and more accurately than any other group of individuals. We appeal to the citizens of Wisconsin not to allow themselves to be misled by grossly exaggerated reports."

THE Committee on Interstate Cooperation of the National University Extension Association

has announced that the subject for national debate next year will be "Resolved: that the several states should enact legislation providing for a system of complete medical service available to all citizens at public expense." This means that it will be debated by more than 100,000 students in the high schools, colleges and universities throughout the nation. Past experience has demonstrated that public interest generally will be stimulated. In order to provide students with adequate materials for the study of the proposition, the committee is devoting the eighth annual "Debate Handbook" to the field of medical economics. It is the function of the editor to secure contributions and to select reprint material which will reflect current medical and lay opinion. The debate is not limited to discussion as to the actual statement, since the negative may offer counter-plans, such as compulsory health insurance, group practice or annual fee payment.

A COMPOSITE course in social philosophy, to be given by the combined faculties in social science and philosophy, has been announced for the next academic year by Antioch College. The course is planned to give students an adequate background for the understanding of present social trends. It will consist chiefly of readings on the development of modern social thought, beginning with the end of the Middle Ages. The faculty directing the work will include Professors M. N. Chatterjee, sociology; V. Carlson and V. O. Watts, economics; J. A. Horton, history; J. D. Kingsley, government, and W. Kahoe, philosophy.

AMONG those who will participate in the education lecture series of the Institute of Public Affairs, to be held from June 18 to 28 at the University of Denver, are Rufus B. von KleinSmid, president of the University of Southern California; Henry Lester Smith, president of the National Education Association; John W. Studebaker, U. S. Commissioner of Education, and E. E. Oberholtzer, superintendent of schools, Houston, Texas. The economics unit series will be held from July 8 to 19, and will have Isador Lubin, U. S. Commissioner of Labor Statistics, as chairman of the round-tables on socio-economic security. J. Eugene Harley, professor of political science at the University of Southern California, will assist in the government unit, from July 22 to August 2, as lecturer in the series, "The New Goals and the New Problems of Government," and will participate in the round-tables on "Reform in American Government." From August 5 to 16, the unit series on sociology will have as lecturer Earle Eubank, chairman of the department of sociology, University of Cincinnati. The Institute of Public Affairs will be concluded with the unit on philosophy, from August 19 to 28; T. V. Smith, department of philosophy, University of Chicago, will be the lecturer on "This Day in Civilization," and will participate in the round-tables.

SENIORS and juniors at the University of Redlands are this year having a two weeks reading period during the second and third weeks of May. The seniors utilize this period further to integrate their field of concentration for the comprehensive examinations which are being administered to seniors in all fields of study for the second year. Juniors will demonstrate the extent to which they have discovered how to carry on by the independent study plan by making reports to their faculty at the end of the period on projects which have been mutually agreed upon.

THE Russell Sage College, Troy, N. Y., has announced that it will join with Albany Hospital and Albany Medical College in instituting a new four-year college degree by the School of Nursing. Its plan and curriculum will follow the recommendations of the National Committee on the Grading of Nursing Schools, which has spent nearly $300,000 conducting a survey of nursing education in the country. The plan calls for the freshman and senior years to be spent in residence at Russell Sage College, and the two middle years at the Albany Medical Center.

MORE than fifty courses in business training and the teaching of commercial education will be given in the thirty-sixth summer session of Columbia University, which begins on July 8 and continues until August 16. Instruction will also be given in stenography, typewriting and the use of office appliances. Objectives and curriculum problems of commercial education will be outlined by Professor William R. Odell, who will

evaluate the aims of commercial education and indicate the contribution which the commercial curricula make to the general program of secondary education. Special research in commercial education will also be directed by Professor Odell.

DISCUSSION

THE RESPONSIBILITY OF THE COLLEGE IN EDUCATING FOR LEISURE

ONE of the foremost reasons advanced for a college education is that it helps the individual adjust himself more readily to the changing conditions of his environment. To-day we are going a step further and directing thought toward controlling these changes as well as helping the individual make adjustments to them.

Certainly adjustments need to be made to-day. There was a time when people found a complete outlet for their talents in their work. All their time, efforts and interests were given over to their jobs. Now they must find a place to use skills, interests and talents in leisure. Thus, the new education must also provide for avocational training. Instead of teaching the individual methods of attaining success in an eight-hour working day, the task is now to provide him with a background which will enable him to live in a twenty-four-hour day.

So much of our life and character is affected and determined by what we do in our leisure time that preparation for its use should not be left to chance. Education for leisure should not be left to casual agencies, but should be inspired and controlled to some extent by the college. We have left this great responsibility too long in the hands of clubs and other organizations, and the need in this field is urgent.

That there is a great necessity for this type of service has been pointed out many times. Stuart Chase[1] writes, "Play is the fly-wheel of life, and America, with the most stupendous recreational equipment ever dreamed of, does not know how to play. It can only step on foot throttles, insert coins in metal slots, scan headlines, crowd through clicking turnstiles, rush headlong down roller coasters—seeking a balance which these things seldom give." Others believe that through our contact with machines we have lost the faculty of playing and that the majority of us are blindly seeking an outlet in commercial amusements—an outlet which those instruments of profit can not supply.

What a different picture of education and its possibilities is presented by Everett Dean Martin,[2] who says, "Education may be said to be achieving its purposes in a nation to the extent that quiet reflection supplants superficial cleverness, and that minds with patience and grace and breadth of outlook, with indifference to fads and catchwords and with respect for excellence, supplant the 'go-getter' and the 'movie-fan,' the worshipper of mammon, the sensation monger and the narrow sectarian."

Education for leisure should not be a special phase of the curriculum. It should not lay down rules and principles as to where, when, how and why we should use and enjoy leisure. It would be futile to give specific instructions about how to spend any work-free time the individual may have at his disposal. Following rules would take all the enjoyment from it. The most desirable procedure would be to acquaint the student with the fields in which the finer opportunities exist—the skills in games, the beauties of nature, the finer skills in the arts and crafts and the real enjoyments of music and literature—and then train him as an all-around man, a good judge of values, capable of doing his own choosing and of developing his own techniques.

This training, besides being conducive to a use of leisure that will have other than its purpose the mere alleviation of boredom, will have values which can be applied to other fields and life in general. Thus, in educating for leisure, we are educating for more complete living—a richer, fuller and more productive life.

The college is in a strategic position to be the most effective agency in this matter. It is the "stepping-off" place from which students, supposedly well equipped—but too often with the

[1] Stuart Chase, "Men and Machines." Simon and Schuster, 1932.

[2] E. D. Martin, "Meaning of a Liberal Education." Garden City Publishing Co., p. 310.

creative part of them undeveloped because they have done little or no original work—go out to take their place in the world. The students are of an age when they can be readily made to see the value of purposeful use of leisure. The college has the facilities and surely the faculty, as students of contemporary civilization, can visualize the problem well enough to teach its larger implications.

The approach might be made from practically every department in the college. L. P. Jacks, prominent English educator, believes that physical education should be the basis, and art the object, in this new system. On the long line connecting the basis with the object, each department can readily find its place. It is certain that with the broad range of interests which the college has the means to foster, students of all types might easily find opportunity for development in accordance with their respective abilities and interests.

Dr. Jacks succinctly summed up the responsibility of the college when he said,[3] "It should be the general function of our colleges to study and apply all means and methods by which the forces, desires, notions, and interests now being wasted in shallow amusement and the second-hand sportsmanship of the bleachers, can be turned in the direction which runs through the successive stages of skills to the higher accomplishment of beautiful play, and thence onward to the final stage of creative achievement."

The college can no longer refrain from taking a stand in the matter of educating for a balanced life. It must realize that contemporary living is at least as important as a knowledge of Latin and Greek, and it must discard that supercilious attitude when all things not of a strictly academic nature are proposed; for on the basis of the large numbers needing guidance and the obvious physical, mental and moral values, leisure activities with a preconceived purpose become more than mere diversions; they are vital factors in the progress of this age, and on this score it is one of society's important functions to provide a background which will be conducive to a worth-while use of time not spent in earning a livelihood.

ARTHUR DANIELS

ALLEGHENY COLLEGE

[3] L. P. Jacks, "Education through Recreation." Harper and Brothers, 1930, p. 390.

ENRICHMENT OF THE CURRICULUM FOR THE SMALL HIGH SCHOOL

IN a recent issue[1] of SCHOOL AND SOCIETY in a discussion of the inadequacies of the smaller high schools the following statement is made: "Such schools can not economically extend their curriculum much beyond what they offer at present, and unless high schools evolve a new organization of subject-matter whereby the total number of subjects may be reduced, or unless they develop a new method which makes it possible for one teacher to handle successfully two or more subjects at the same time, these schools are bound either to offer a poverty-stricken program of secondary education or to overload their teachers." I am going to offer a suggestion as to how a small high school of three to six teachers may offer an enriched program.

In general, it will be necessary for the first two years of the curriculum to be taught in classes devoted to one subject, *i.e.*, where all the pupils are working in the same field. As we all know, however, where the first and second year classes are very small, these may be combined in certain subjects without serious educational disadvantages. In like manner many of the third and fourth year classes may be combined. But all this is well-known procedure. This procedure, however, may be extended to the point where unlike subjects may be taught in the same class. First of all, we shall have to adopt a directed study plan of instruction where most of the work of the pupils is done on an individual basis. With this set-up there is no reason whatsoever why an instructor should not have two to four classes in the same period all working on different subjects. Of course, the total number in such a group should always be as small as possible.

The instructor will plan his work in units each not less than a week long. While he is explaining the work of a unit with one group, the other groups at their seats can be working out their units in their own subjects. It will be best if the instructor does not devote an entire class period to any one group, for he will best leave a few minutes for giving individual help to the other groups. Discussion will have to be kept to a minimum, but there will still be opportunity for fruitful discussion.

[1] SCHOOL AND SOCIETY, Vol. 41 (number 1053), 285 *f.*, "Smaller Secondary Schools."

Perhaps this plan would be clearer by an illustration. Let us suppose that the instructor has twenty-five students distributed among three groups—solid geometry, third year Latin and economics. The Latin course can well be worked out so that the instructor will translate with this class once a week, provided that he helps them during the week in the more difficult passages. Comprehension questions may either supplant or supplement translation at times. The writer has used this plan in regular classes and has found it to work well even with slower students. Such a plan also lends itself readily to adaptation of the amount of reading to the different levels of ability. Discussions can be interspersed dealing with problems of history, mythology, etc. The solid geometry can well be worked with units of varying length with emphasis upon individual work in notebooks. This type of work also lends itself readily to adaptation to several levels of ability where the spread may nicely be kept vertical. Tests can easily be administered here where the pupil is required to pass the lower level test before proceeding to the higher levels. Of course after the pupil had demonstrated his ability, he might be allowed to omit certain portions of the lower levels and the tests for the lower levels. The writer has seen two variations of this method of mathematics instruction worked by former colleagues of his.

The economics course will lend itself beautifully to the suggested plan, especially if the school library can furnish several different textbooks and reference books. Here the instructor will guide the reading of the students by means of problems, comprehension questions, discussions and notebooks of material from newspapers and magazines.

Such a plan as discussed above has been used for different courses in mathematics meeting in the same classroom at the same time by a former colleague of the writer's. This teacher was teaching in a night high school where the classes were small, but where the variety of subjects was large for a small faculty. The methods suggested above, of course, will be varied or changed according to the individual teacher. One thing, however, is certain—the regular recitation method will not lend itself readily to this doubling-up. Then, too, groupings of subjects will have to be made carefully to fit the preparation of the teacher, because the ingenuity of the teacher will be more taxed here than with a single class on his hands. It seems as though two sciences might be taught together with very small groups. Even a beginning language might be given together with another very small class.

This plan might be extended to the point where one instructor would be conducting honor work in several subjects at a given class period. Here perhaps not more than ten students might be working each on an individual course under the guidance of the instructor with the same honor student possibly pursuing more than one course in the same class. This instructor would have to be rather versatile, but a number of our high school instructors could do this sort of work very well. In this way practically the only limit to the curriculum for the honor student would be the academic capabilities of the instructors. The average student would be more limited by the necessity of our giving only two, three or four different subjects in the same class, but he still would have a far wider choice in the curriculum than he has at present.

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SPECIAL CORRESPONDENCE

THE TEACHING OF PHILOSOPHY IN CALIFORNIA

"IN the beginning" the world of university instruction, although certainly not void, was without that form and diversity of our own day which manifests itself in a multitude of departments and an even greater multitude of courses. From that beginning down to the present, philosophy has occupied a conspicuous and honored position, in spite of attacks upon its value by enthusiastic and perhaps conceited technologists. Within the field originally embraced by philosophy the several more fundamental sciences developed until they were able to separate themselves from the parent and exist as independent disciplines. Some of these separations are compara-

tively recent. It was not until 1922, for example, that the department of psychology was established at the University of California. Prior to this time psychology had been taught in the department of philosophy. In the early days of the colleges and universities of California provision was made for the teaching of philosophy, and ever since then that teaching has gone on quietly and efficiently. Some rather famous philosophers have had a part to play—William James, for example, and Howison. At the present time in California opportunities for the advanced study of philosophy compare favorably with those of states along the Atlantic Coast.

Certain recent events and conditions have turned the thoughts of those interested in the teaching of philosophy to a more detailed examination of relevant facts and future possibilities. Among the disturbing conditions is the state of flux in economic and political affairs, giving rise to two sorts of questions. What will be the effect of the present rapid changes upon our cultural heritage, upon the love of learning, upon the place which philosophy occupies in the minds of educated persons? And what contributions can philosophy make, what can philosophers do to ease the sufferings of the present and to render social progress more probable than social retrogression? Philosophers are generally inclined to believe that the subject which they teach, in spite of its seeming abstractness and apparent impractical nature, does have something to offer in these disturbed days.

More specific facts which have contributed to the discussion are the difficulties which recent graduates in philosophy, in common with all other graduates, have had in finding positions. In comparing the departments of philosophy at Stanford and at the University of California at Berkeley during ten pre-war years (1902–1911) and during ten post-war years (1924–1933), one discovers no marked change in the statistics of these departments relative to other departments. The average number of students majoring in philosophy at Stanford increased from 0.3 per cent. of the total number of registered students to 0.6 per cent. The number of B.A. degrees in philosophy increased at Stanford from 0.4 per cent. of the total B.A. degrees to 1.4 per cent., and increased at Berkeley from 1.38 per cent. to 1.45 per cent. The number of M.A. degrees in philosophy increased at Stanford from 0.0 per cent. to 0.6 per cent., and decreased at Berkeley from 6.0 per cent. to 1.2 per cent. The number of Ph.D. degrees in philosophy at Berkeley decreased from 2.1 per cent. to 2.0 per cent. The approximate constancy of these percentages, however, indicates that the increase in the totals at both universities has been accompanied by an actual increase of persons qualified to teach philosophy. One third of all those who have ever received the M.A. in philosophy at Stanford, one fifth of those who have received the M.A. in philosophy at Berkeley, and over one half of those who have received the Ph.D. in philosophy at Berkeley have been awarded these degrees within the last few years, in 1928 or later. (I have not been able to gather statistics from other colleges and universities.)

This increase in the production of persons qualified to teach philosophy has come at a period of our history when many believe that philosophy is more needed than ever before. Perhaps it has come because the economic situation has already turned the minds of students towards philosophy. But it has come at a time when it is more difficult than ever to find positions for prospective teachers. And as if to dramatically bring this to the attention of embryo philosophers, the College of the Pacific decided in the summer of 1934 that for financial reasons its department of philosophy would have to be abolished and its professor of philosophy dismissed. Its courses in philosophy are now taught by men from other departments.

This reference to the College of the Pacific reminds us that there are a number of educational centers, in addition to Berkeley and Stanford, where philosophy may be studied. The University of California at Los Angeles, the University of Southern California, the Claremont Colleges, Mills College maintain departments with highly trained staffs and a wide variety of courses. More restricted offerings are listed at Occidental College, Whittier College, the University of Redlands and other private colleges. Presumably the educational institutions of the Roman Catholic Church give a prominent place to philosophy.

There are over fifty junior colleges in California, thirty-four of which are supported by taxation. In about one third of these no philoso-

phy is taught, but these are usually the institutions with small enrolment. Twenty-five of the public colleges offer one or more courses in philosophy. Usually there is one instructor, sometimes two or three, and in the Los Angeles Junior College five. The training of these instructors in the field of philosophy varies greatly; some have a Ph.D. in philosophy, whereas others have had no college training in the subject and are dependent entirely upon private study and reading. Since many junior college teachers must give instruction in two or more fields, similar statements could undoubtedly be made concerning other subjects. And it may very well be that in individual cases a man with little technical training in philosophy teaches the subject more effectively than one with much training. But the study of the available data leads one to suspect that administrators have been less concerned with the subject-matter content of the training of the teachers of philosophy than in the case of teachers of other subjects.

There are seven public teachers colleges in California, some of which maintain junior college departments. The state does not require its prospective teachers to receive instruction in philosophy. Such courses as are offered are likely to be either elective or else offered primarily for junior college students. The chief exception is a course in the theory or philosophy of education, required of seniors in all teachers colleges, and usually taught by some member of the education department. At San Jose, to take a definite example, there is no other required course in philosophy for teachers college students, except that English majors are required to take history of philosophy.

Let us look at philosophy as a subject of study from the point of view of the undergraduate who is considering the possibility of philosophy as a major. Very likely he will ask what kind of profession or occupation he will be fitted for by such a course. Suggestive data for an answer to this question are found in the occupational choices of 161 men and 157 women who have taken one degree or another in philosophy at Berkeley and Stanford. For women marriage is the most frequent outcome, in some cases preceded or accompanied by a profession. Nearly a third of the entire total have become teachers, although in widely divergent fields and ranks. The ministry, the law and medicine have attracted many. Other professions represented are nursing, journalism, librarianship, social service, civil service and the army. A goodly number turn to business as managers of factories, bankers of greater or lesser degree, publicity agents, financiers and secretaries. And the arts are represented by novelists, poets, composers, painters, actors and dancers. Glancing over the Stanford list I note these specific items: consular service, stock exchange, professor of journalism, actress, president of American Unitarian Association, assistant district attorney, dining car service, diamond merchant, manager of cigar factory, assistant to Rivera, marketing of oriental rugs, manager of gas station, Buddhist pastor, airplane salesman, etc. Apparently the study of philosophy does give a general training which enables one to meet a variety of situations. Recently I questioned a young bank clerk, a former philosophy major, asking whether he regretted having devoted so much energy to philosophy. Quite the contrary, he assured me. Upon leaving home for college he had been instructed to forget all about the necessity for earning a living later on and to devote himself to cultural studies. Many of his classmates, who were so busy with practical subjects in college that they had no time for cultural courses, are now employed at tasks entirely different from the ones for which they prepared so faithfully. He has the cultural background which they lack.

The adult education movement offers another possibility for the spread of philosophy. Many of the leaders are sympathetic, but feel that they have to move slowly and educate their clientele gradually. Dr. Meiklejohn's experiment in San Francisco seems to be very largely an experiment in the teaching of philosophy.

These rambling observations are offered partly for the purpose of indicating that there are opportunities in California for expansion in the teaching of philosophy. In all our educational institutions above the high-school grades there are many students who are never introduced to this ancient, stimulating and important field of thought. It would even be an interesting experiment for some high-school teachers to try to de-

vise and offer a course in some aspect of philosophy to high-school seniors.

As to whether it is worth while to teach philosophy at all, the answer can be made only briefly. Can a person be said to be adequately educated for living in this modern world who knows nothing at all of logic and reflective thinking, nothing of ethics, nothing of the metaphysical implications of modern science? Can a person be said to be educated who has never met Socrates, who has never read Plato, or who has no conception whatever concerning the problems of contemporary philosophy? As a teacher of philosophy, I am probably prejudiced. But I am supported in my prejudice by such incidents as these. A physician, a specialist at Stanford Hospital, confided that philosophy was his most valuable non-professional undergraduate course. An engineer whom I met beside a high Sierran stream, a consultant called in from another state, urged his opinion that every college student ought to be required to take at least one course in philosophy. Doubtless such quotations as these could be matched by opposing statements. But since philosophy does have so much to offer to some people, and since it represents an aspect of culture and civilization which seems worth preserving in some form, we ought to expose as many students as possible to its influence.

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QUOTATIONS

WHAT IS A UNIVERSITY?[1]

A UNIVERSITY is a community of scholars. It is not a kindergarten; it is not a club; it is not a reform school; it is not a political party; it is not an agency of propaganda. A university is a community of scholars.

The scholars who compose that community have been chosen by their predecessors because they are especially competent to study and to teach some branch of knowledge. The greatest university is that in which the largest proportion of these scholars are most competent in their chosen fields.

To a certain extent the ability of a university to attract the best scholars depends on the salaries it can pay. To a certain extent it depends on the facilities, the libraries and laboratories it can offer. But great scholars have been known to sacrifice both salaries and facilities for the sake of the one thing that is indispensable to their calling, and that is freedom.

Freedom of inquiry, freedom of discussion and freedom of teaching—without these a university can not exist. Without these a university becomes a political party or an agency of propaganda. It ceases to be a university. The university exists only to find and to communicate the truth. If it can not do that it is no longer a university.

Socrates used to say that the one thing he knew positively was that we were under a duty to inquire. Inquiry involves still, as it did with Socrates, the discussion of all important problems and of all points of view. You will even find Socrates discussing communism in the Republic of Plato. The charge upon which Socrates was executed was the same one that is now often hurled at our own educators: he was accused of corrupting the youth. The scholars of America are attempting in their humble way to follow the profession of Socrates. Some people talk as though they would like to visit upon them the fate which Socrates suffered. Such people should be reminded that the Athenians missed Socrates when he was gone.

There is nothing new about this issue in America. At the opening of the eighteenth century the foundation of Columbia University was delayed for fifty years because of arguments about what religious teaching should be permitted in the institution. Thereafter the fight was over the advance of experimental science and its repercussions on religious faiths. In the first ten years of the University of Chicago the quarrel turned on the progressive religious teachings of the staff. The battle for freedom of inquiry and teaching in the natural sciences and religion has

[1] Address by President Robert M. Hutchins, of The University of Chicago, given under auspices of the National Congress of Parents and Teachers and the National Broadcasting Company, April 18, 1935.

now been won. No sane citizen, however he may disagree with any professor, can wish that battle had been lost. The scientific advance of the past century and the release from bigotry which we now enjoy can be traced directly to the success of the universities in securing the right to study these fields without interference.

In the past forty years universities have taken up the study of economics, politics, sociology and anthropology. They have been endeavoring to create social sciences, which, if they can be created, may prove as beneficent to mankind as natural science and the technology which rests upon it. In inquiry into social problems professors have run into prejudices and fears, exactly as they did in studying natural science and theology.

These prejudices and fears are now especially intense, because we have been passing through a period of severe depression. In the twelve years I have been in higher education I have seen a marked change. In 1923 we often heard that the professor was a useless creature, remote from the real world and giving his students no knowledge of it. Now we hear that the professor should get back to the cloister and not let his students learn any more about the real world than he can help. I ascribe this change to the bad case of nerves induced in many people by the depression. The normal reaction to misfortune is to blame somebody else for it. Universities are easy marks. They are tax-exempt. They do not reply to abuse or misrepresentation. One who suffers from business cares or domestic worries or political disappointment or general debility can relieve his feelings with impunity by talking about the Reds in the universities. I know that many honest and earnest people are seriously alarmed. I know too that they are misinformed.

As a matter of fact I have never been able to find a Red professor. I have met many that were conservative, and some who would admit they were reactionary. I have met some who were not wholly satisfied with present conditions in this country. I have never met one who hoped to improve them through the overthrow of the government by force. The political and economic views of university faculties are those of a fair cross-section of the community. The views of those who are studying social problems are worth listening to, for these men are studying those problems in as unbiased and impartial a fashion as any human being can hope to study them.

When I was in college fifteen years ago students were the most conservative race of people in the country. Everybody lamented their indifference and apathy to the great questions of the day. I used to hear complaints that they read only the sporting pages of the newspapers and derived their other knowledge of current affairs from the movies. When I began to teach I taught a course called "Introduction to Social Science." There were many aspects of the social sciences to which I could not introduce my class because they would not let me. The political and social dogmas then current these gentlemen had accepted whole. No suggestions of mine could sway or even arouse them.

At every age their elders have a way of overestimating the pliability of the young. As a result many people seem to have the notion that the student comes to college a sort of plastic mass, to be molded by the teacher in whatever likeness he will. But at 18, or 19, or graduation from high school, it is far too likely that the student has solidified, and too often in more ways than one. The most that a teacher can hope to do with such students is to galvanize or stimulate. If he wanted to, he could not hope to persuade.

It must be remembered that the purpose of education is not to fill the minds of students with facts; it is not to reform them, or amuse them, or make them expert technicians in any field. It is to teach them to think, if that is possible, and to think always for themselves. Democratic government rests on the notion that the citizens will think for themselves. It is of the highest importance that there should be some places where they can learn how to do it.

I have heard a great many times in recent years that more and more students were getting more and more Red. In universities that are intelligently conducted I do not believe it. In universities which permit students to study and talk as they please I see no evidence of increasing Redness. The way to make students Red is to suppress them. This policy has never yet failed to have this effect. The vigorous and intelligent student resents the suggestion that he is not

capable of considering anything more important than fraternities and football. Most of the college Reds I have heard about have been produced by the frightened and hysterical regulations of the colleges. They are not Reds at all; they are in revolt against being treated like children.

Mr. Thomas W. Lamont, partner in J. P. Morgan and Company, has advanced another reason for the interest of students in unconventional doctrines, a reason which is doubtless operating too. Mr. Lamont says, "I hear complaint that our college professors are teaching too much of socialistic theory. That would not be my observation. These are days when among the teaching forces . . . the freest sort of academic freedom should prevail." He goes on: "But to me it is little wonder that many of our students to-day are radical, joining the Socialist Party, or are even looking with a kindly eye upon the allurements of Communism. The sort of world they have seen is one of chaos. . . ."

If Mr. Lamont is right, instead of attempting to suppress free discussion, we should set ourselves to remedy the cause of radicalism, the chaos of the modern world. I venture to suggest the value of encouraging intelligent, calm and dispassionate inquiry into methods of bringing order out of chaos. That is the American way.

In the state of Illinois the Communist party is on the ballot. Should students be allowed to graduate from Illinois colleges in ignorance of what Communism is? If they did they might vote that ticket by mistake. The greatest historian of the South has shown that the war between the states arose largely because the southern colleges and universities did not dare to say that there were any arguments against slavery and secession. Those who would suppress freedom of inquiry, discussion and teaching are compelled to say that they know all the answers. Such a position is egregiously conceited. It is also a menace to our form of government. As Walter Lippmann has put it, "The essence of the American system . . . is a way of life in which men proceed by unending inquiry and debate."

Anybody who has real familiarity with higher education will not hesitate to assert that professors are not engaged in subversive teaching. They will also remind the public that professors are citizens. They are not disfranchised when they take academic posts. They therefore enjoy all the rights of free speech, free thought and free opinion that other citizens have. No university would permit them to indoctrinate their students with their own views. No university would permit them to turn the classroom into a center of propaganda. But off the campus, outside the classroom, they may hold or express any political or economic views that it is legal for an American to express or hold. Any university would be glad to have Mr. Einstein among its professors. Would anybody suggest that he should be discharged because he is a "radical"?

All parties, groups and factions in this country should be interested in preserving the freedom of the universities. Some of our states now have radical administrations which have reached out to absorb the universities. The only hope in those states for the preservation of another point of view is in adhering to the doctrine that if a professor is a competent scholar he may hold his post, no matter how his political views differ from those of the majority. Not only so, the newspapers, the broadcasters, the churches and every citizen should uphold the traditional rights of the scholar. Wherever freedom of inquiry, discussion and teaching have been abolished, freedom of the press, freedom of religion and freedom of speech have been threatened or abolished, too.

Look at the universities of Russia and see how they have sunk to be mere mouthpieces of the ruling party. Look at the universities of Italy, where only those doctrines which the government approves may be expounded. Look at the universities of Germany, once among the greatest in the world, now a mere shadow, because their freedom is gone. These are the ways of communism and fascism.

In America we have had such confidence in democracy that we have been willing to support institutions of higher learning in which the truth might be pursued, and when found might be communicated to our people. We have not been afraid of the truth or afraid to hope that it might emerge from the clash of opinion. The American people must decide whether they will longer tolerate the search for truth. If they will the

universities will endure and give light and leading to the nation. If they will not, then as a great political scientist has put it, we can blow out the light and fight it out in the dark; for when the voice of reason is silenced, the rattle of machine guns begins.

SOCIETIES AND MEETINGS

THE AMERICAN SCIENCE TEACHERS' ASSOCIATION

FOR several years the American Association for the Advancement of Science Committee on Place of Science in Education has assisted teachers of science in any ways that became possible. The suggestion was often made that some kind of national alliance of science teachers would probably be helpful. Therefore the committee planned a conference in connection with the Boston meeting in 1934, and another in connection with the Pittsburgh meeting in 1935. The Pittsburgh conference resulted in the decision to organize the American Science Teachers' Association. The report of the organizing committee presents a concise outline of the nature of the proceedings, also the tentative plans for future activities. Abbreviated excerpts follow from the report of H. A. Carpenter, Rochester, New York, chairman of the organizing committee.

The meeting in Pittsburgh on December 29, 1934, was opened by Chairman Caldwell of the American Association for the Advancement of Science Committee on the Place of Science in Education, who introduced Wilhelm Segerblom of the Phillips Exeter Academy, the presiding officer of the morning session. The morning program included: "The Influence of Certain Gases upon Plants," by Dr. Wm. Crocker, director of the Boyce Thompson Institute for Plant Research, Yonkers, N. Y.; "Newer Concepts of Loudness, Pitch, and Timbre of Musical Tones," by Dr. Harvey Fletcher, research director, Bell Telephone Laboratories, New York, N. Y.; "Present Status of Knowledge of Cosmic Rays," by Dr. Robert A. Millikan, California Institute of Technology, Pasadena, California.

It is not the purpose of a brief report to review these masterly talks. Dr. Millikan's talk has already been published in *Science*, March 1, 1935. It is hoped that the other talks may be published in science journals.

The luncheon address, with Homer W. LeSourd, Milton Academy, as presiding officer, was by Professor E. L. Thorndike, Columbia University, on "Psychology of Attitudes."

The afternoon session was presided over by Dr. W. L. Eikenberry, of State Teachers College, Trenton, New Jersey. Six short reports or discussions of problems relating to a national organization were presented. These were: "Report of an Extended Inquiry Regarding a National Organization of Science Teachers," by Harry A. Carpenter, *chairman*, specialist in science, Rochester Public Schools, Rochester, N. Y.; "How Can Science Teachers Keep up with Growing Science Knowledge?" by John H. Harms, physics teacher, Ames Senior High School, Ames, Iowa; "Could a National Organization Develop and Promote a National Policy of Science Education?" by Earl R. Glenn, head of science department, State Teachers College, Montclair, New Jersey (read by Dr. Ira C. Davis); "Could a National Organization Stimulate Professionalism among Science Teachers?" by Florence Billig, assistant professor of natural sciences, Wayne University, Detroit, Michigan; "How Could an Organization Encourage, Promote, Correlate and Distribute Results of Research in Science Teaching?" by Harry A. Cunningham, professor of biology, Kent State College, Kent, Ohio; "Relation of a National Organization to Training of Teachers in Service," by George W. Jeffers, State Teachers College, Farmville, Virginia.

Mr. Carpenter reported the opinion of his committee that an attempt should be made to secure opinions from widely scattered science teachers as to the need for, and functions of, a national association of science teachers. He, therefore, sent letters to the editors of 150 city, state and national educational journals with the request for the names of two or three of the leading science teachers in the community. Seventy-five replies were received from 43 states, the District of Columbia, Alaska and Hawaii. A second letter, containing a tentative type of organization and questionnaire, was sent to 415 people. These included not only the names of the people received from the journals, but also the 72 people who gave their addresses at the Boston meeting, members of the N. A. R. S. T., and 44 officers of organizations throughout the country.

Altogether more than 150 replies were received

from 104 cities and towns in 36 states, including the District of Columbia. Over 70 per cent. of the replies to the questionnaire favored the organization of a national association or federation of science teachers. However, nearly 80 per cent. stated that they would identify themselves with such an organization, if formed, and 74 per cent. stated they would advise other teachers to become associated with it and that they would advise their local, city or state association to affiliate with it.

The type of organization proposed for consideration involves both individual membership, and delegate membership from affiliated existing organizations. It is proposed that the business of the association be handled by a board of directors, consisting of the delegate members and representatives of the individual membership group.

It was asked whether there are local problems, the solution of which might be aided by a national association. Eighty-three individuals replied that they have such local problems. Twenty-two indicated no such problem and 46 made no answer or were indefinite.

The problems suggested were organized and sent to the afternoon speakers as they applied to their particular topic of discussion, in order that they might be given consideration in the preparation of their talks.

The proposed type of organization included a number of possible functions. Teachers were asked to indicate those they considered of major importance and of least importance and to include additional functions which, in their judgment, might be served by a national organization. On the basis of the replies from the questionnaires, the following revised list of functions has been prepared.

(1) Develop and promote a national policy of science education.

(2) Foster professionalism among science teachers.

(3) Promote publication and dissemination of research results and other material of interest and value to science teachers.

(4) Promote adequate training of teachers in preparation and in service.

(5) Promote interest in national acceptance of science objectives and teaching methods.

(6) Encourage and promote research in science education under existing research organizations and educational institutions.

(7) Promote and stimulate activity in local science teachers organizations.

(8) Determine and promote a 12-year science program.

(9) Serve as a professional clearing house for local problems of national significance.

Following the afternoon papers, a spirited discussion was carried on for about an hour, at the end of which those present voted that a national organization of science teachers shall be formed and that tentatively its name shall be The American Science Teachers' Association.

The following committee, selected chiefly from the teachers present, was elected to further a plan of organization and to prepare a program for a meeting to be held in St. Louis, Missouri, during the meetings of the American Association for the Advancement of Science in December, 1935. This committee was voted power to add to its membership. By special vote of the teachers present, Dr. Otis W. Caldwell was added to this committee. The members of the committee at this time are:

Florence Billig, Wayne University, Detroit, Michigan.

Otis W. Caldwell, Teachers College, Columbia University, N. Y.

Harry A. Carpenter, Rochester, N. Y., *chairman*.

W. L. Eikenberry, State Teachers College, Trenton, N. J.

John A. Hollinger, Pittsburgh Public Schools, Pennsylvania.

Phillip G. Johnson, University of Nebraska, Lincoln, Nebraska.

Homer W. LeSourd, Milton Academy, Milton, Mass.

Mary K. McBride, supervisor of science and mathematics in the Junior High Schools, San Francisco, California.

Wilhelm Segerblom, Phillips Exeter Academy, Exeter, N. H.

Ralph K. Watkins, University of Missouri, Columbia, Mo.

Hanor A. Webb, George Peabody College for Teachers, Nashville, Tennessee.

More than 150 science teachers were present at the Pittsburgh meeting. They came from 20 states and the District of Columbia. Sixty-nine cities and towns were represented, 25 of which

were in Pennsylvania. Sixteen teachers who attended the Pittsburgh meeting also attended the meeting in Boston.

The next meeting of The American Science Teachers' Association will be held in St. Louis, Missouri, on Thursday, January 2, 1936. Mr. Harry A. Carpenter, Rochester, N. Y., will appreciate correspondence and suggestions from all who are interested.

OTIS W. CALDWELL,
General Secretary, American Association for the Advancement of Science.

REPORTS

RESEARCH FUNDS AT HARVARD UNIVERSITY

FIFTY-SIX awards totalling $61,815 have been assigned from the Milton and Clark funds to members of the Harvard teaching and research staffs to enable them to do research work during the academic year 1935–36. The names of the recipients and the subjects of their research follow:

Wilbur C. Abbott, professor of history, to purchase a photographic reproduction of the Parliamentary Diary of Sir Simonds D'Ewes for the Widener Library.

Kenneth T. Bainbridge, assistant professor of physics, to purchase apparatus for concentrating isotopes.

Thomas Barbour, professor of zoology and director of the University Museum, and Alfred S. Romer, professor of zoology, to collect fossil reptiles in Southern Brazil.

Paul D. Bartlett, instructor in chemistry, to study quantitatively the so-called "Positive Halogen" in organic compounds.

Henry E. Bent, assistant professor of chemistry, to study the absorption spectra of organic free radicals at low temperatures.

Henry B. Bigelow, professor of zoology, for a continuation of the investigation of siphonophores collected by Dr. Johannes Schmidt on the last *Dana* expedition, 1928–30.

Marland P. Billings, assistant professor of geology, to complete the geology of the New Hampshire portion of the Mt. Cube Quadrangle and the Chocorua Quadrangle.

Nicholas A. Borodin, curator of fishes, to study the anabiosis of fishes.

Huntington Brown, instructor in English, to prepare for publication a bibliography on the classical tradition in English literature.

Harold H. Burbank, professor of political economy, to continue the investigation of the operation of the general property tax.

Henry J. Cadbury, professor of divinity, to reconstruct and edit two lost works of George Fox, "The Book of Miracles" and the "Great Journal," and to prepare other autobiographical material.

Frank M. Carpenter, assistant curator of invertebrate paleontology, to study fossil insects from Creede shales, in Colorado.

Hubert L. Clark, associate professor of zoology, to illustrate a report on Australian echinoderms.

Franzo H. Crawford, assistant professor of physics, to continue the study of Schumann absorption of polyatomic molecules.

Samuel H. Cross, assistant professor of Slavic languages and literatures, and Kenneth J. Conant, associate professor of architecture, to make an architectural survey of the Cathedral of St. Sophia (Kiev, U. S. S. R.).

Walter F. Dearborn, professor of education, to organize records, obtained over a twelve-year period, of the mental and physical growth of American public school children.

Allan Evans, instructor in history, to edit the text of F. B. Pegolotti's *La Pratica della Mercatura* and to prepare a "Glossary of Medieval Italian Terms of Coinage."

Oliver L. Fassig, research associate at the Blue Hill Observatory, to continue work on a report on the climate of Puerto Rico.

Merritt L. Fernald, professor of natural history, to produce engravings of technical details of critical or newly studied plants and to map their geographic affinities.

Louis F. Fieser, associate professor of chemistry, to continue an investigation of organic cancer-producing compounds.

Paul R. Gast, assistant professor of forestry, to extend the study of the effect of varied nutrition and radiation on the growth of seedling pines.

Norman S. B. Gras, professor of business history, to make a study of the history of boards of directors in American business, 1790–1890.

James C. Greenway, Jr., assistant curator of birds, to publish a report on a collection of birds from the Coastal Range between the Markham and Waria Rivers, northeastern New Guinea.

Lewis U. Hanke, instructor in history, to edit and prepare for publication a volume of manuscript on the efforts made by Dominicans in the sixteenth century to protect the Indians under Spanish rule in America.

William H. P. Hatch, professor of the literature and interpretation of the New Testament at the Episcopal Theological School, to study Greek and Syriac paleography.

Richmond L. Hawkins, associate professor of French, to collect unpublished letters by Auguste Comte to show the influence of Comte and of positivism on the thought of the United States from 1850 to 1860.

H. O'Neill Hencken, curator of European archeology, to supply part of the funds required to finance the fourth Harvard archeological expedition to Ireland.

William E. Hocking, professor of philosophy, to investigate changes in major oriental religions.

Earnest A. Hooton, professor of anthropology, to continue the study of human eye pigmentation by means of color photography.

W. Arnold Hosmer, associate professor of accounting, to collect and analyze a series of cases from the records of commissions and companies on the cost of fixed assets of public utilities.

Cornelius S. Hurlbut, Jr., instructor in mineralogy, to study corundum deposits in the western United States.

Bernard M. Jacobson, research fellow in medicine, to purify, to identify chemically and to study the biological activities of the materials in liver which are effective in pernicious anemia.

George B. Kistiakowsky, associate professor of chemistry, to study the heat capacities of polyatomic gases by the adiabatic expansion method.

Esper S. Larsen, Jr., professor of petrography, to continue the study of minerals by x-ray analysis.

L. Don Leet, instructor in geology, to compile a book detailing the principles of seismological investigations and reporting results of current research at Harvard.

Alan M. G. Little, instructor in Greek and Latin, to continue the study of the Hellenistic structural style of wall decorations in Pompeii.

John L. Lowes, professor of English literature, to study the poetry of John Keats, to complete a new edition of the works of five chief romantic poets, and to study the "Gutch Memorandum Book" of Samuel Coleridge.

Theodore Lyman, director of the Jefferson Physical Laboratory, to continue x-ray studies.

Lionel S. Marks, professor of mechanical engineering, to investigate the flow of air through centrifugal fans with the hope of putting the design on a rational basis.

Harry R. Mimno, assistant professor of physics, to continue studies on the measurement of the effective height of the Kennelly-Heaviside layers.

Samuel E. Morison, professor of history, to continue work on the "History of Harvard College and University."

Arthur D. Nock, professor of the history of religion, to make a text of and publish the Hermetic religious writings, and to complete for publication certain preliminary studies.

Charles Palache, professor of mineralogy, to continue work on a revision of Dana's "System of Mineralogy."

Milman Parry, assistant professor of Greek and Latin, to transcribe oral poetry of the southern Slavs.

Chandler R. Post, professor of fine arts, to visit certain public and private European collections in connection with research in the preparation of Volume VII of the "History of Spanish Painting."

Hugh M. Raup, research associate in the Arnold Arboretum, to continue the investigation of the systematic and geographic botany of the subarctic Mackenzie River basin in northwestern Canada.

Albert Sauveur, professor of metallurgy and metallography; Comfort A. Adams, professor of engineering, and Jacob P. Den Hartog, assistant professor of applied mechanics, for the study of metallurgical and stress problems of welding and stress-relieving.

Donald Scott, director of the Peabody Museum, to permit the Peabody Museum to cooperate with the Harvard Division of Anthropology in an expedition to Kashmir and the Tibetan border.

Harlow Shapley, director of the Harvard College Observatory, and Donald H. Menzel, assistant professor of astronomy, for an expedition, headed by Dr. Menzel, to observe the Siberian total solar eclipse on June 19, 1936.

Ernest J. Simmons, instructor in English, to consult Russian manuscripts in connection with the completion of a biography of Pushkin, the Russian poet.

Jabez C. Street, instructor in physics, to study the production of induced radioactivity by neutrons and the disintegration of atomic nuclei by protons and deutons.

Richard P. Strong, professor of tropical medicine, to prepare illustrations for the monograph, "Onchocerciasis, with Special Reference to the Central American Form of the Disease."

Yellapragada SubbaRow, Austin teaching fellow in biological chemistry, to isolate and investigate

the structure of substances in liver which are active in pellagra and pernicious anemia and cause reticulocytosis in guinea pigs.

Morgan Upton, assistant professor of general physiology, to study the integrative action of the central nervous system by means of experiments on the binaural localization of sound.

William F. Wells, instructor in sanitation, to study the effect of ventilation factors on the viability and dispersion of bacteria and other living elements in air.

John H. Welsh, Jr., instructor in zoology, and Fenner A. Chase, Jr., assistant curator of marine invertebrates, to study the eyes of deep-water crustaceans.

The Milton Fund was established in 1924 under the will of William F. Milton, which provided that the grants should be made "in the interests of or for promoting the physical and material welfare and prosperity of the human race, or to assist in the discovery and perfecting of any special means of alleviating or curing human disease, or to investigate and determine the value of importance of any discovery or invention."

The income of the Clark Fund, created under the will of Joseph H. Clark, is to "be devoted to the encouragement and advancement of original research."

EDUCATIONAL RESEARCH AND STATISTICS

RESULTS OF AN ACTIVITY PROGRAM IN A SMALL SCHOOL

SUPERIORITY in teaching the tool skills has not been generally claimed as the greatest value of the activity program or large-unit-of-work curriculum. In fact, many advocates of activities hold that large units of work would be justified in preference to the formal program, even though they produced inferior results in the skills, because they are thought to produce much better results in terms of interest, happiness, social growth and personality.

Nevertheless, before we can whole-heartedly make so important a change in school procedure we should at least know how much of one value we are giving up, if any, in order to gain a supposedly greater value in another line. Such a motive prompted the investigation which is reported in this article.

To make a dependable and trustworthy objective evaluation of any major educational procedure is usually difficult. The present investigation was no exception to the general rule. Every effort was made to get at the truth, in so far as conditions and circumstances would permit. The school was a very small one, hence the number of cases was small. The time during which the experiment ran was only 2.5 months because of practical considerations, although obviously a longer period would have been desirable.

The measurement was done by means of standard tests, and progress was computed on the basis of initial and final tests in each of the subjects, as indicated in Tables I and II. Since there are definite norms for the tests, progress was easily computed in terms of number of months of grade placement. By this means one grade or one year's results can be compared with another, since the amount of expected progress for a given period of time is definitely known as a result of the standardization of the tests.

Two rooms in the school were on an activity basis. One of these rooms contained only the sixth grade; the other contained the third grade and the B 4 grade. As controls, there were two groups, as follows: (1) The room between these two, containing the A 4 and all the fifth grade, was operated on a formal program for the duration of the experiment. (2) The fifth-grade records of such students as were still in the sixth grade were consulted in order to get data on their progress during the semester previous to this experiment. Thus the progress of twelve children when in the fifth grade under a formal program could be compared with the progress of the same twelve pupils when they were in the sixth grade under an activity program.

The reader will see from the above paragraph that the study was of the equivalent-groups type, but that standard test progress norms were used to bridge the gaps between different semesters and grades in order to gain a basis for comparison.

But groups can be equated and compared on the basis of standard test progress norms only if they are normal groups. Hence two special precautions were taken: (1) Each group was given an intelligence test to take account of mental ability. This showed that the two groups which had the activity program were normal, each averaging 102. But the two groups that had the formal program were somewhat brighter, each group averaging 110, and therefore capable of making slightly greater progress. (2) Each group was examined to see whether its initial subject achievement was well adjusted to its mental age. It was found that the sixth grade activity group was badly below its mental ability, averaging 10.9 months retardation. The third and fourth grade activity group was almost exactly up to its normal status, with only .4 months retardation. The fourth and fifth grade formal group was retarded an average of 7.0 months, and the 12 sixth graders who had the formal program the previous year averaged 11.2 months of retardation. These differences in mentality and retardation must be kept in mind in interpreting conclusions, because they affect the extent to which the various groups were "free to gain."

Let us now analyze the results of the activity program, as shown in Table I. We note that in 2.5 months the progress was approximately 5 months of standardized test grade placement. In other words, the children learned about twice as much subject-matter as is normal for children at large over the nation. In the sixth grade room the progress in arithmetic fundamentals was just slightly below the national norm, but all other subjects showed a decided excess, which was extremely large in the field of geography. In the third and fourth grade room the arithmetic and spelling results were just about normal and language results were slightly below normal, with substantial excesses in the other subjects that were measured. The high peak of superiority in the third and fourth grade room is in reading vocabulary, whereas it was geography in the sixth grade. This variability, or profile, of high peaks and depressions in achievement seems to be a direct result of the selection of activities. Change the activity and you get a different subject emphasis.

TABLE I

AVERAGE AMOUNTS OF PROGRESS UNDER THE ACTIVITY PROGRAM, IN MONTHS OF GRADE PLACEMENT

Abilities measured	21 sixth graders		26 third and fourth graders	
	Months progress in 2.5 months	Per cent. of normal progress	Months progress in 2.5 months	Per cent. of normal progress
Reading comprehension	5.35	214	4.04	161
Reading vocabulary	5.45	218	7.44	297
Spelling	3.90	156	2.66	106
Language	5.70	228	1.92	77
Literature	5.50	220	.....	.....
History and civics	5.55	222	.....	.....
Geography	8.60	344	.....	.....
Physiology and hygiene	4.20	168	.....	.....
Arithmetic reasoning	4.75	190	.....	.....
Arithmetic fundamentals	2.40	96	2.62	105
Average of all subjects	5.40	216	4.54	181

The results of the control groups, taught by a formal program, are given in Table II. The most important point of all is that the fourth and fifth grade room under the formal program achieved approximately the same excess progress as did the grades above and below working under an activity program. Arithmetic is again the low point. Spelling is high. Reading is about the same. The twelve sixth graders whose fifth grade progress while under the formal program was recorded did not do so well with their formal program. They made just normal prog-

TABLE II

AVERAGE AMOUNTS OF PROGRESS UNDER THE FORMAL PROGRAM, IN MONTHS OF GRADE PLACEMENT

Abilities measured	27 fourth and fifth graders		12 sixth graders during previous semester	
	Months progress in 2.5 months	Per cent. of normal progress	Months progress in 5 months[1]	Per cent. of normal progress
Reading comprehension	5.85	234	−.59	−12
Reading vocabulary	5.74	229	.10	2
Spelling	9.55	381	.....	.....
Language	3.55	142	3.76	75
Arithmetic reasoning	5.48	219	9.20	184
Arithmetic fundamentals	2.77	111	13.32	266
Average of all subjects	5.49	220	5.16	103

[1] Note that the measurement period was a full semester in this case. Comparisons with other groups should be made on the basis of percentages only.

ress, as shown by the average of all subjects. They were backward in reading and language and ahead in arithmetic.

Comparison of the progress shown in Tables I and II suggests several things: (1) The school as a whole improved decidedly during the time the experiment was under way. Whether the activity program introduced a new professional spirit and enthusiasm or whether the measurement program gave all teachers and pupils an added incentive would be difficult to determine. Very probably both of these factors were present. (2) The results under the activity program were entirely comparable, on the whole, to those under the formal program, even in the skills and tool subjects which were measured. In other words, the supposed social and civic advantages of the activity program were obtained without any demonstrable loss in the mastery of fundamental skills. (3) The irregularity of the profile of achievement in different subjects is as great under one program as the other. The fear that an activity program may cause achievement to become lopsided would not seem to be any more justified than would the corresponding fear of an uneven or disproportionate emphasis under a formal program. (4) The argument is considerably stronger in favor of the activity program than the figures in the tables show, because of the initial differences between the groups as regards intelligence and retardation. The intelligence advantage was with the groups that had the formal program. These groups were also more seriously retarded at the beginning and thus more free to gain. In other words, the groups that had the activity program had more accumulated slack in their work and were better endowed with intellectual power to take it up during the experiment.

In conclusion, while it seems probable from this study that the activity work fully justified itself in this school as a means of teaching the fundamental skills, the writers hope that the procedure of the investigation itself may be of some value in suggesting some of the factors that must be considered in making an adequate evaluation on a larger and more comprehensive scale.

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NEW BOOKS IN EDUCATION

BOAS, LOUISE S. *Woman's Education Begins.* Pp. 306. Wheaton College Press. $2.00.

LÉVÊQUE, ERNEST J. *Introduction to French.* Pp. 361. Doubleday. $1.40.

PRATT, MARION, and others. *Second Year Latin.* Pp. 686. Illustrated. Houghton, Mifflin. $1.88.

RISEN, MAURICE L. *Legal Aspects of Separation of Races in the Public Schools.* Pp. 142. Author, Philadelphia.

SPAFFORD, IVOL. *Fundamentals in Teaching Home Economics.* Pp. 424. Wiley. $2.75.

WADE, HAROLD H. and others. *Expressing Yourself.* Book I, pp. 575. $1.48. Book II, pp. 573. $1.56. Houghton-Mifflin.